

# FINAL ENVIRONMENTAL ASSESSMENT

## Geothermal Leasing, Washoe County Parcels – October 2016 Lease Sale

DOI-BLM-NV-C010-2016-0033-EA

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**October 2016**



It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

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# **Chapter 1: Introduction**

*Changes that were made to the EA as a result of the comments submitted during the public comment period are noted in the response tables in Appendix C and are shown in italics in this document.*

## **1.1 Identifying Information:**

Geothermal Leasing of Parcels in Washoe County DOI-BLM-NV-C010-2016-0033-EA

### **1.1.1 Title, EA number, and type of project:**

Geothermal Leasing, Washoe County Parcels — October 2016 Lease Sale Environmental Assessment; EA# DOI-BLM-NV-C010-2016-0033-EA

### **1.1.2 Location of Proposed Action:**

The Proposed Action is located on the public land within Washoe County, Nevada (Figures 1, 2, and 3). Legal descriptions for geothermal lease parcels that are pending within the subject lease areas comprising the Proposed Action are listed in Appendix A.

The three leases comprising the Proposed Action are described as:

- Fish Springs 1  
T. 26 N., R. 18 E., section 27 Mount Diablo Base and Meridian Washoe County, Nevada
- Fish Springs 2  
T. 26 N., R. 19 E., sections 20, 21 & 29 Mount Diablo Base and Meridian Washoe County, Nevada
- Steamboat  
T. 18 N., R. 20 E., section 28 Mount Diablo Base and Meridian Washoe County, Nevada

### **1.1.3 Name and Location of Preparing Office:**

Bureau of Land Management Carson City District  
5665 Morgan Mill Road Carson City, Nevada 89701

### **1.1.4 Lead Office - and number**

Bureau of Land Management, Carson City District, Stillwater Field Office LLNVC01000

### **1.1.5 Case file number**

n/a

### **1.1.6 Applicant Name:**

Bureau of Land Management

## **1.2 Background Information:**

The Bureau of Land Management (BLM), Carson City District (CCD), Sierra Front and Stillwater Field Offices have jointly prepared this environmental assessment (EA) to analyze impacts to the human and natural environment from leasing of fluid mineral resources on public land located in Washoe County, Nevada. This document has been prepared in accordance with the National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality

(CEQ) regulations implementing NEPA, and the Federal Land Policy and Management Act of 1976 (FLPMA). These provide the authority for the BLM to allow for the exploration, development, and utilization of geothermal resources on BLM-managed public lands.

This EA is tiered to the Programmatic Environmental Impact Statement for Geothermal Leasing in the Western United States (PEIS), (BLM and USFS, 2008) that standardized geothermal and fluid mineral leasing and permitting for fluid minerals operations on federal lands. That document consolidated and updated many of the mitigation measures and standard stipulations from various BLM (and FS) documents addressing fluid mineral leasing and development, including RMPs, forest plans, and other environmental documents for fluid mineral leasing and development. The Record of Decision (ROD) from that PEIS, signed on December 17, 2008, amended and updated existing BLM RMPs and provided for the consistent mitigation of fluid minerals operations by federal land management agencies. *The PEIS and ROD can be found electronically at [http://www.blm.gov/geothermal\\_eis](http://www.blm.gov/geothermal_eis).*

Stipulations provided in the PEIS serve as the minimal level of protection and were adopted into local land use plans (BLM and USFS, 2008). For example, if an administrative unit has eligible wild and scenic rivers, the wild river stipulation would apply. If an existing land use plan offers more protective measures or has resource specific commitments (e.g., memorandum of understanding for cultural resources), those more protective measures would apply instead. This EA therefore, takes a closer look at the potential indirect and cumulative impacts from geothermal leasing to determine whether these indirect impacts by the lessee could be significant.

A geothermal lease is for the earth's heat resource where there is federal mineral estate. Geothermal resources are underground reservoirs of hot water or steam created by heat from the earth. Geothermal steam and hot water can reach the surface of the earth in the form of hot springs, geysers, mud pots, or steam vents. These resources also can be accessed by wells, and the heat energy can be used for generating electricity or other direct uses, such as heating greenhouses and aquaculture operations or for dehydrating vegetables. Geothermal resources on federal lands are subject to lease under the Geothermal Steam Act of 1970, as amended (30 USC § 1001, et seq.), and geothermal resource leasing regulations (43 Code of Federal Regulations [CFR] §3200).

Developing geothermal resources on public land involves four phases; leasing, exploration, development/operation and close-out. The first phase is to issue a lease. Leasing of geothermal resources confers an implied right to the lessee to explore and or develop the geothermal resource. The act of leasing does not directly result in surface disturbance activities; however ground disturbance would occur during the second phase, exploration, and phase three, development. Phase four, close-out, would involve removing facilities and reclaiming the site. The BLM would require a separate site-specific NEPA analysis for exploration, development/operation, and close-out phases.

*Nominations for geothermal lease parcels are made by a qualified company or individual for lands – up to 5,120 acres per parcel – in which they have an interest in conducting exploration and/or development for geothermal resources. The nominated parcels are reviewed by the BLM for conformance with the applicable Land Use Plan(s) and other regulations prior to environmental review of each parcel. The BLM holds geothermal lease sales at least once every*

*two years in states where there are nominations pending. The geothermal competitive leasing process is described in 43 CFR §3203.*

*This EA provides a programmatic analysis by focusing on the leasing of the three parcels rather than project-specific exploration and development of each parcel (details for the geothermal exploration and development of each parcel are unknown at this time). Broad impacts associated with the allocation of geothermal resources for leasing, along with the adoption of stipulations are analyzed.*

### **1.3 Purpose and Need for Action:**

The purpose of the Proposed Action is to lease some or all of the geothermal resources at sites located in Washoe County on three potential lease parcels. The three parcels located on public land are open to fluid mineral leasing by regulation and cover an area of approximately 1,600 acres.

The need for the Proposed Action is to respond to *geothermal leasing nominations to explore for and produce geothermal resources within three potential lease parcels (1,600 acres) of BLM-administered lands in Washoe County, Nevada. The need is established by the BLM's responsibilities under the Geothermal Resource Leasing regulations (43 CFR 3200). Additionally Executive Order (EO) 13212 as amended by EO 13302, Actions to Expedite Energy-Related Projects, which states "the increased production and transmission of energy in a safe and environmentally sound manner is essential."* Executive departments and agencies are directed to "take appropriate actions, to the extent consistent with applicable law, to expedite projects that will increase the production, transmission, or conservation of energy."

EO 13212 further states that "(f)or energy-related projects, agencies shall expedite their review of permits or take other actions as necessary to accelerate the completion of such projects, while maintaining safety, public health, and environmental protections. The agencies shall take such actions to the extent permitted by law and regulation, and where appropriate." In response to the EO 13212, BLM issued a National Energy Policy Implementation Plan in June 2001, which directs the BLM to process leases, in a timely manner, in order to help support efforts to increase energy production from federal lands, while preserving the health of the federal lands.

### **1.4 Land Use Plan Conformance**

The proposed action and alternatives described below are in conformance with the following land use plans and land use plan amendments:

- **Carson City District Consolidated Resource Management Plan (CRMP), May 2001:**
  - MIN-1, Desired Outcomes, 1: "Encourage development of energy and mineral resources in a timely manner to meet national, regional and local needs consistent with the objectives for other public land uses";
  - MIN-4, Standard Operating Procedures: Leasable Minerals, 5: "Oil, gas, and geothermal exploration and production upon BLM land are conducted through leases with the Bureau and are subject to terms and stipulations to comply with all applicable federal and state laws pertaining to various considerations for sanitation, water quality, wildlife, safety, and reclamation. Stipulations may be site specific and are derived from the environmental analysis process."



- **Programmatic Environmental Impact Statement for Geothermal Leasing in the Western United States (PEIS), Record of Decision (ROD) signed December 17, 2008:** *The decision 1) allocated BLM lands as either open or closed to consideration for geothermal leasing, 2) established a projected new level of potential geothermal development through existing planning level decisions (a reasonably foreseeable development scenario), and 3) adopted stipulations, BMPs, and procedures for geothermal leasing and development. The Geothermal ROD actions were to be implemented as amendments for 114 BLM land use plans. The BLM makes decisions whether or not to issue geothermal leases in conformance with the amended land use plans on the basis of the analysis in the Geothermal PEIS.*

*In accordance with CEQ regulations (40 CFR 1508.28, 40 CFR 1502.20), this EA is tiered to the Geothermal PEIS and the Geothermal ROD. Tiering uses coverage of general matters in broader NEPA documents to inform subsequent narrower documents. It allows for analysis of a smaller range of alternatives and limits the analysis focus to issues not already addressed. Portions of this document incorporate information and analyses from the Geothermal PEIS and Geothermal ROD by reference in accordance with 40 CFR 1502.21.*

- **Nevada and Northeastern California Sub-Regional Greater Sage-Grouse Land Use Plan Amendment, ROD signed September 21, 2015.** *This Decision in conjunction with the approved resource management plans and approved resource management plan amendments constitutes BLM land use planning decisions to conserve the Greater Sage-Grouse (GRSG) and its habitats throughout its remaining range that is located on public lands administered by the BLM. The efforts of the BLM, in coordination with the Forest Service on National Forest System lands within the remaining range of the species, constitute a coordinated strategy for conserving the GRSG and the sagebrush-steppe ecosystem on most Federal lands on which the species depends.*

*The Proposed Action is the leasing of three geothermal parcels that have been nominated for sale in Washoe County, Nevada. Leasing does not authorize surface disturbance from any geothermal exploration or development activities. The two Fish Springs lease parcels nominated for sale have been mapped as containing Priority Habitat Management Areas (PHMA) and General Habitat Management Areas (GHMA). Additionally the two parcels are within 3.1 miles of a GRSG lek. Due to these factors, the stipulations described in Appendix B of this EA would be applied to these leases.*

*Appendix C of the GRSG Land Use Plan Amendment's ROD states that Required Design Features (RDFs) are required for certain activities in all GRSG habitats. RDFs establish the minimum specifications for certain activities to help mitigate adverse impacts. The RDFs would apply to any future exploration or geothermal proposals at the time they are received and the proposal would be analyzed through site-specific environmental analysis (details for geothermal exploration and/or development are unknown at this time).*

*Additional decisions from this plan that would apply to any future proposals for exploration and/or development (in addition to the RDFs) are those stated below:*

- *Management Decisions for Unleased Fluid Minerals; MD MR 4a: “For BLM land in the state of Nevada only, in portions of the PHMAs outside of SFA, geothermal projects may be considered for authorization if all of the following conditions are met:*
  - *A team comprised of BLM, FWS, and NDOW specialists advises the BLM State Director on appropriate mitigation measures for the project and it’s ancillary facilities, including lek buffer distances using the best available science;*
  - *Mitigation actions are consistent with this Plan’s mitigation strategy such as the Nevada Conservation Credit System, and;*
  - *The footprint of the project is consistent with the disturbance management protocols identified in this plan (see MD SSS2 and Appendix E).”*
- *MD MR 5: “In GHMAs, manage oil and gas and geothermal fluid minerals with moderate constraints, timing limitations, and controlled surface use stipulations (see Appendix A; Figure 2-4)”.*
- *MD MR 6: “In PHMAs and GHMAs, allow only geophysical exploration that does not crush sagebrush or create new or additional surface disturbance. Examples of technologies that may meet this requirement are drilling methods using helicopters, articulated rubber-tired vehicles that leave no trace, and vibroseis geophysical operations on roads and bladed shoulders.*
- *MD MR 7: Prohibit surface shot methods in PHMAs.”*

## **1.5 Relationship to Statutes, Regulations, Plans and Environmental Analysis**

The Proposed Action and Alternatives are consistent with the following documents:

- Federal Land Policy and Management Act of 1976;
- Endangered Species Act of 1973;
- National Environmental Policy Act of 1969;
- Migratory Bird Treaty Act of 1918;
- National Historic Preservation Act (16 USC 470f);
- Archeological Resources Protection Act;
- Native American Graves Protection and Repatriation Act;
- Indian Sacred Sites – EO 13007;
- Consultation and Coordination with Indian Tribal Governments – EO 13175;

## **1.6 Decision to Be Made:**

The Authorized Officer will decide whether to lease or not lease the Fish Springs 1 & 2 and Steamboat parcels for the October 26, 2016 competitive geothermal lease sale. And if leased, what stipulations would be attached to the lease to protect important resources

*A decision to approve the geothermal lease nominations would not authorize surface disturbance from geothermal exploration or development activities. The BLM would conduct additional environmental analysis and make a new decision for each proposal that involves surface disturbance on a geothermal lease.*

*If the Proposed Action is approved, the BLM would offer the leases in a competitive sale. Once a lease is issued, the leaseholder would have the right to explore for and develop geothermal resources on the leased land for a term of 10 years, subject to renewal or extension and additional environmental analysis.*

## **1.7 Scoping and Issue Identification:**

Internal scoping meetings for the BLM were initiated on April 18, 2016. During internal scoping BLM staff identified issues and concerns regarding the Proposed Action. The BLM interdisciplinary team visited the sites on May 13, 2016.

*Comments were accepted on the Geothermal Leasing, Washoe County Parcels – October, 2016 Lease Sale Environmental Assessment (EA), DOI-BLM-NV-C010-2016-0033-EA, for a 30 day period from May 27, 2016 through June 24, 2016; although comments received in a timely manner after this date were also considered.*

*Notifications were sent on May 27, 2016 to the interested parties' mailing list and notification of the availability of the EA was also sent to 105 other State and federal agencies through the Nevada State Clearinghouse on May 27, 2016. The Carson City District (CCD) published a news release on May 27, 2016 that was sent to media outlets listed on the Nevada BLM State Office media list.*

*The Washoe Tribe of Nevada and California and the Susanville Rancheria were notified of the proposed lease sale via certified letter on May 25, 2016 regarding the possibility of Native American Religious Concerns or any other impacts that could result from the Proposed Action. There are no known Native American concerns for the Fish Springs lease parcels, NV-16-10-001 & 002. However, the Washoe Tribe has previously formally expressed considerable concern over the leasing of parcels adjacent the current Steamboat lease parcel (NV-16-10-003). The Washoe Tribe has previously recommended adjacent Steamboat parcels not be leased. Further discussion is detailed in Section 3.6 of the Final EA (Native American Religious Concerns). Consultation with the tribe is ongoing. Without a specific proposed project location and description, identifying impacts to specific tribal resources is difficult. The tribes would be given opportunities to meet with BLM staff and management at the lease sale, exploration, and development stages, which would allow for further tribal participation opportunities. Ongoing consultation could result in new information and additional Mitigation Measures for these proposed lease parcels.*

*Comment letters were received from six Federal and State agencies by email. The Federal agency that commented was the US Fish and Wildlife Service (USFWS). State agencies that commented on the EA were the Nevada Division of Water Resources (NDWR), the Nevada State Historic Preservation Office (SHPO), the Nevada Division of State Lands (NDSL), the Nevada Department of Wildlife (NDOW) and the State Land Use Planning Agency (SLUPA).*

*Changes that were made to the EA as a result of the comments submitted during the public comment period are noted in the response tables in Appendix C of this EA.*

## **Chapter 2: Proposed Action and Alternatives**

## **2.1 Description of the Proposed Action:**

The BLM CCD is proposing to lease three parcels covering approximately 1,640 acres of public land in Washoe County, Nevada.

- Fish Springs; 1,560 acres comprising two parcels (#1 – 360 acres & #2 – 1,200 acres) along the southeastern margin of the Honey Lake Valley approximately forty miles north of Reno, NV, ten miles east of Doyle, CA and six miles south of Flannigan, NV in Washoe County, Nevada (Figures 1 & 2).
- Steamboat; 40 acres approximately 10 miles south of Reno, NV at the south end of the Truckee Meadows in Washoe County, Nevada (Figure 3).

Issuance of geothermal leases confers on the lessee a right to future exploration and development of the resource with the lease area. However, leasing geothermal resources does not confer on the lessee the right to proceed with any ground-disturbing activities related to exploring for or developing geothermal resources. Issuance of geothermal leases could have indirect impacts because such leasing represents a commitment of resources, and it is reasonably expected that subsequent exploration, development, and closeout would occur. Proposals for exploration and/or development at specific sites would be examined for conformance with the land use plan and analyzed for NEPA adequacy at the time the proposals are submitted. Any proposal for exploration and/or development must be analyzed as required by NEPA.

A geothermal lease typically grants the lessee access to geothermal resources in the lease area for a period of 10 years. The terms of the lease require the lessee to show a certain level of diligence toward developing the geothermal resources within the lease area or the lease may be terminated. Once an area is developed for productive use of geothermal energy, the lease allows the lessee use of the resource for 40 years with a right of renewal for another 40 years. Geothermal exploration and production on public land conducted through leases is subject to terms and stipulations to comply with all applicable federal and state laws pertaining to various considerations for sanitation, water quality, wildlife, safety, and reclamation. Lease stipulations may be site specific and are derived from the environmental analysis process. Stipulations are site specific and are derived from the current management plan for that specific area.

Federal geothermal leases are initially issued through a competitive process. Only public lands that have been offered competitively and receive no bid are made available for noncompetitive leasing. Parcels not sold at the competitive sale become available for noncompetitive leasing for a 2-year period. Most lease applications are for a minimum of 640 acres. Lands not available for leasing are cited under Department of Interior, Bureau of Land Management, 43 CFR §3201.11 Geothermal Resource Leasing and Geothermal Resources Unit Agreements and in the CRMP, 2001, as amended. Examples of public lands not open to fluid mineral leasing are Wilderness Areas, Wilderness Study Areas (WSAs), Areas of Critical Environmental Concern (ACECs), or National Conservation Areas. Also excluded are tribal lands, wildlife refuges, wildlife management areas, and private land with titles that include all fluid mineral rights.

*This EA incorporates by reference the lease stipulations from the Geothermal ROD (Section 2.3, pages 2-4 through 2-9). The lease stipulations would apply to any potential future*

*geothermal exploration and development on the three parcels as a result of lease sales. For the purposes of this EA, the lease stipulations from the CRMP of 2001, the PEIS and ROD of 2008 and the Nevada and Northeastern California Sub-Regional Greater Sage-Grouse Land Use Plan Amendment, ROD are considered design features of the Proposed Action, and would apply to the parcels under the jurisdiction of each plan, at the discretion of the BLM (refer to lease parcel stipulations in Appendix B).*

## **2.2 No Action Alternative**

Under the No Action Alternative the BLM would deny the geothermal leasing nominations for the three parcels. The BLM would recommend no leasing and future exploration and development would not occur on the parcels. The BLM could adopt the No Action Alternative if the Proposed Action would result in unacceptable impacts to the federal lands.

## **Chapter 3: Affected Environment and Environmental Consequences**

This chapter identifies and describes the current condition and trend of elements or resources in the human environment which may be affected by implementation of the Proposed Action or Alternatives and the environmental consequences, or effects, of the action(s).

### **3.1 General Setting:**

General descriptions of the affected environment for the three proposed lease areas are characterized by arid to semiarid conditions, low annual precipitation, and wide daily ranges in temperature.

#### **Fish Springs Parcels**

The two lease parcels in the Fish Springs area are located along the southern margin of the Honey Lake Valley which arches southeastward from near Susanville, CA in the northwest toward the Fish Springs area. This portion of the Honey Lake Valley is sparsely populated by widely spaced “ranchettes” with Doyle, CA being the closest community. Fish Springs Parcel #1 lies on alluvium of low relief, sloping gentling northward from an elevation of about 4,100 feet to about 4,000 feet. The sandy soil – derived from locally occurring granitic rocks – supports a plant community dominated by sagebrush with grasses growing amongst the bushes. The portion of Fish Springs Parcel #2 lying in sections 20 & 29 is situated both topographically and botanically similar to the Fish Springs Parcel #1, save for the fact that the elevation in the southern portion of section 29 approaches 4,500 feet. The portion of Fish Springs Parcel #2 that lies within section 21 is typified by higher elevations ranging to 4,700 feet with a similar plant community to that of the rest of the parcel.

#### **Steamboat Parcel**

The Steamboat parcel is an isolated forty acre parcel of BLM land at an elevation of ranging from approximately 4,800 to 4,680 feet. The rocky, volcanically derived soils are sparsely vegetated and gently slope downward to the northwest. The parcel is located in suburban south Reno with subdivisions as close as one-half of a mile. The Steamboat Hot Springs Healing Center and Spa is located down gradient from the parcel and also utilizes geothermal resources in the area. Additionally, there are three geothermal power plants nearly adjacent to the parcel.

### **3.2 Supplemental Authorities:**

Appendix 1 of the BLM’s NEPA Handbook (H-1790-1) identifies Supplemental Authorities that are subject to requirements specified by statute or executive order and must be considered in all BLM environmental documents. The table below lists the Supplemental Authorities and their status in the project area. Supplemental Authorities that may be affected by the Proposed Action are further described in this EA.



**Table 3.1: Supplemental Authorities Table:**

Resource <sup>a1</sup>	Present Yes/No	Affected Yes/No	Rationale
Air Quality	Yes	No	There would be no impact from leasing alone. Further analysis would be required for exploration and/or development activities.
Areas of Critical Environmental Concern (ACEC)	No	No	Portion of parcel NV-16-10-003 is within a portion of the Steamboat Hot Springs Geysers Basin ACEC. This portion of the parcel has been removed since the Steamboat ACEC is closed to fluid mineral leasing. See Additional Rationale discussion in the EA.
Cultural Resources	Yes	No	See Additional Rationale discussion in the EA.
Environmental Justice	No	No	No low income or minority populations would be disproportionately affected by the Proposed Action.
Farm Lands (prime or unique)	No	No	None present in the project area.
Floodplains	No	No	None of the parcels are located within the FEMA 100 year floodplain.
Invasive, Nonnative Species	Yes	No	Noxious weeds: Scotch Thistle, Medusahead, and hoary cress. Invasive weeds: Cheatgrass, alyssum, bur buttercup, purple mustard, and bull thistle. There would be no impact from leasing alone. Further analysis would be required for exploration and/or development activities.
Migratory Birds	Yes	No	The Migratory Bird Treaty Act would apply to all proposals on these lease parcels. There would be no impact from leasing alone. Further analysis would be required for exploration and/or development activities.
Native American Religious Concerns	Yes	No	See Additional Rationale discussion in the EA.
Threatened or Endangered Species	Yes	No	See Additional Rationale discussion in the EA.
Threatened or Endangered Species (plants)	Yes	No	See Additional Rationale discussion in the EA. Steamboat buckwheat, <i>Eriogonum ovalifolium</i> var. <i>williamsiae</i> , is present in parcel NV-16-10-003.
Wastes, Hazardous or Solid	No	No	None present in the project area.
Water Quality (Surface/Ground)	Yes	No	There would be no impact from leasing alone. Further analysis and initiation of a Hydrologic Monitoring Plan would be required prior to exploration and/or development activities.
Wetlands/Riparian Zones	Yes	No	There are hot and cold springs and riparian areas adjacent to the lease areas. They would not be impacted during leasing. Further analysis and initiation of a Hydrologic Monitoring plan would be required prior to exploration and/or development.
Wild and Scenic Rivers	No	No	None present in the project area.
Wilderness/WSA	No	No	None present in the project area.

<sup>a1</sup> See H-1790-1 (January 2008) Appendix 1 Supplemental Authorities to be Considered.

Supplemental Authorities determined to be Not Present or Present/Not Affected need not be carried forward or discussed further in the document.

Supplemental Authorities determined to be Present/May Be Affected may be carried forward in the document.

### 3.3 Resources or Uses Other than Supplemental Authorities

The following resources or uses, which are not Supplemental Authorities as defined by BLM's Handbook H-1790-1, may also be present in the area. BLM resource specialists have evaluated the potential impact(s) of the Proposed Action and Alternatives on these resources and have documented their findings in the table below. Resources or uses that may be affected by the Proposed Action are further described in this EA.

**Table 3.2: Resources or Uses Other Than Supplemental Authorities Table**

Resource or Issue <sup>a2</sup>	Present Yes/No	Affected Yes/No	Rationale
BLM Sensitive Species	Yes	No	See Additional Rationale discussion in the EA.
BLM Sensitive Species	Yes	No	See Additional Rationale discussion in the EA.
Fire Management/Vegetation	Yes	No	There would be no impact from leasing alone. Further analysis would be required for exploration and/or development activities.
Forest Resources	No	No	No trees are present within any of the lease parcels.
General Wildlife	Yes	No	See Additional Rationale discussion in the EA.
Land Use Authorization	Yes	No	There would be no impact from leasing alone. Further analysis would be required for exploration and/or development activities.
Lands with Wilderness Characteristics	No	No	There would be no impact from leasing alone. Further analysis would be required for exploration and/or development activities.
Livestock Grazing	Yes	No	There would be no impact from leasing alone. Further analysis would be required for exploration and/or development activities.
Minerals	Yes	No	An LR2000 search for minerals projects and mining claims yielded none within the lease parcels, therefore mineral resources will not be further analyzed in this EA.
Paleontological	No	No	A BLM records search was conducted to ensure that no currently identified paleontological resources were present in the parcels that have special interest or importance. Further analysis would be required for exploration and/or development activities.
Recreation	Yes	No	There would be no impact from leasing alone. Further analysis would be required for exploration and/or development activities.
Socioeconomics	Yes	No	If the parcels were leased, the royalty payments from those leases would be divided between the respective County, state, and federal agencies within which a lease resides providing minor economic benefits to the local, state and national economies. There would be no increase in population at the leasing stage. Further analysis would be required for exploration and/or development activities.

Resource or Issue <sup>a2</sup>	Present Yes/No	Affected Yes/No	Rationale
Soils	Yes	No	The Steamboat parcel has been identified as having moderately-severe soil erosion hazard and the Fish Springs parcels have been identified as having a severe erosion hazard. Stipulations have been applied to the Fish Springs parcels. There would be no impact from leasing alone. Further analysis would be required for exploration and/or development activities.
Travel Management	Yes	No	There would be no impact from leasing alone. Further analysis would be required for exploration and/or development activities.
Vegetation	Yes	No	There would be no impact from leasing alone. Further analysis would be required for exploration and/or development activities.
Visual Resources	Yes	No	There would be no impact from leasing alone. Further analysis would be required for exploration and/or development activities.
Wild Horses and Burros	Yes	No	There would be no impact from leasing alone. Further analysis would be required for exploration and/or development activities.
Global Climate Change	Yes	No	There is public and scientific debate about human caused contributions to global climate change, no methodology currently exists to correlate greenhouse gas emissions (GHG) and to what extent these contributions would contribute to such climate change. Under leasing there would be no GHG emissions or surface disturbance authorized. Further analysis would be required for exploration and/or development activities.
Greenhouse Gas Emissions	No	No	There would be no impacts or GHG emissions from leasing of the three geothermal parcels. Further analysis would be required for exploration and/or development activities.

<sup>a2</sup> Resources or uses determined to be Not Present or Present/Not Affected need not be carried forward or discussed further in the document.

Resources or uses determined to be Present/May Be Affected may be carried forward in the document.

### ***3.4 Additional Rationale Resources Discussion***

#### **3.4.1 Areas of Critical Environmental Concern (ACEC)**

*The southeast parcel of NV-16-10-003 containing the existing 41 acre Steamboat Hot Springs Geyser Basin ACEC has been removed from leasing since this ACEC is closed to leasing in the 2008 Geothermal PEIS (Appendix C). This ACEC is proposed to be removed in the Carson City Draft RMP/EIS due to no longer meeting relevance and importance criteria. The remaining 40 acre parcel of NV-16-10-003 is within the Steamboat Buckwheat Botanical ACEC proposed in the Carson City Draft RMP/EIS.*

*The 80 acre proposed Steamboat Buckwheat ACEC was found to meet Relevance and Importance values described in 43 CFR 1610.7-2 and BLM ACEC Manual 1613 (Draft CCDO RMP/EIS). The Relevant and important values for the proposed ACEC include the federally endangered Steamboat buckwheat (*Eriogonum ovalifolium* var. *williamsiae*) and altered andesite buckwheat (*Eriogonum robustum*), a BLM sensitive species. ACECs are defined in FLPMA Section 103(a) (43 United States Code [USC] 1702) and in 43 CFR 1601.0-5(a) as “areas within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards.” FLPMA further states that it “requires that priority shall be given to the designation and protection of ACECs. “*

*Per the ACEC policy, whenever a designated ACEC may be affected by an authorized activity, special management measures and analysis of effects must be included in the associated NEPA document. If an ACEC is designated, stipulations to protect the relevant and important values may apply however, there are currently no management prescriptions for the proposed ACEC to protect it from geothermal activities. Per the 2008 Geothermal Leasing Programmatic Environmental Impact Statement (PEIS), the BLM has the authority for discretionary closures for Areas of Critical Environmental Concern where the BLM determines that geothermal leasing and development would be incompatible with the purposes for which the ACEC was designated, or those whose management plans expressly preclude new leasing or development for oil and gas or geothermal resources. Potential impacts from geothermal exploration and/or development on relevant and important values for this proposed ACEC are further discussed in the threatened and endangered species section.*

### **3.4.2 Threatened or Endangered Species**

#### ***Parcel NV-16-10-002***

##### *Carson wandering skipper-*

*The Carson wandering skipper (*Pseudocopaeodes eunus obscurus*) is a small butterfly that was federally listed as endangered in 2001. At the time of listing, only two extant populations were known, one in Washoe County, Nevada, and one in Lassen County, California. In 2004, one additional population was located south of Carson City in Douglas County, Nevada, along the Carson River. In 2005, a second population in Washoe County, Nevada, was confirmed. Currently, there are four extant populations of the Carson wandering skipper (USFWS 2007). The Winnemucca Ranch Road site was designated as an ACEC in 2001 and was subsequently fenced for habitat protection. In 2004, a single male was detected on East Alkali Flat, NV, on Fish Springs Ranch during baselines surveys for the North Valleys Water Project. Subsequent surveys failed to detect the species however, the area may continue to provide a migration corridor between known populations in Honey Lake Valley, CA, and Warm Springs Valley, NV.*

*Carson wandering skipper habitat is characterized as lowland grassland habitats on alkaline substrates. Occupied areas are located in a small region east of the Sierra Nevada in northwestern Nevada and northeastern California, and are characterized by an elevation of less than 5,000 feet, the presence of saltgrass (*Distichlis spicata*) and nectar sources in open areas*

*near springs or water, and possible association with geothermal activity. Salt grass is the larval host plant, while adults require nectar for food. Larval development may depend on the present of the high quality salt grass provided by more permanent water sources.*

*Threats to the subspecies include habitat destruction, degradation, and fragmentation due to urban and residential development; wetland habitat modification; agricultural practices; oil, gas, and geothermal development; and nonnative plant invasion. Other threats include collecting, excessive livestock trampling/grazing, water exportation projects, road construction, recreation, pesticide drift, and inadequate regulatory mechanisms. This subspecies is also especially vulnerable to chance environmental or demographic events as a small population. The combination of only four known populations (three in the planning area), small range, and restricted habitat makes the subspecies highly susceptible to extinction or extirpation from a significant portion of its range due to stochastic events such as fire, drought, disease, or other random occurrences. If it is decided by the BLM to lease Parcel NV-16-10-002, there is potential for geothermal exploration and/or development activities to directly impact Carson wandering skipper through groundwater drawdown and/or habitat removal, or other indirect effects, and depending on project specific proposal. Per the 2008 Geothermal Leasing Programmatic Environmental Impact Statement (PEIS) section 6.6, there would be no effect to listed species or habitats from leasing alone, as no ground disturbing activities are authorized. Any future development activities that may occur subsequent to the issuance of a lease would be subject to project-specific compliance with the Endangered Species Act, including the following mitigation measures:*

***Special Stipulations for Parcel NV-16-10-002 for Threatened and Endangered Species:***

- *Endangered Species Act Stipulation: “The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or their habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act as amended, 16 USC 1531 et seq., including completion of any required procedure for conference or consultation.”*
- *Sensitive Species Stipulation: For agency designated sensitive species (e.g., sage grouse), a lease stipulation (NSO, CSU, or TL) would be imposed for those portions of high value/key/crucial species habitat where other existing measures are inadequate to meet agency management objectives.*
- *The proposed action will be in conformance with the BLM Special Status Species Management manual 6840 (12/12/08), including consultation under Section 7 of the Endangered Species Act if required for actions that may impact this species or its habitat.*

- *For any proposed action for geothermal exploration and/or development, biological surveys, monitoring, and mitigation measures may apply, depending on proposed project location and potential for direct or indirect impacts to special status species.*

### ***Parcel NV-16-10-003***

#### ***Steamboat buckwheat-***

*Steamboat buckwheat, (Eriogonum ovalifolium var. williamsiae; Polygonaceae), was listed as federally endangered in 1986 and is on the Nevada Natural Heritage Program List of Critically Endangered Plants. Steamboat buckwheat is a low, densely matted, compact perennial herb with numerous, densely-leaved, woody branches. The above-ground portions of the plant arise from a shallow but stout, woody, reddish-brown taproot or a shallow, fibrous, rhizomatous root system. Each plant bears numerous oval leaves congested in tight rosettes. Flowers are generally white with a central greenish-brown rib, turning pinkish-tan with age. It grows in young, shallow, poorly developed, light-colored soils. This plant is often found in association with shadscale saltbush, greasewood, and rubber rabbitbrush. It is dependent on wetland margin areas.*

*Steamboat buckwheat is restricted to substrates derived from hot springs deposits in the Steamboat Hills. At the time it was listed, it was thought to consist of a single population of seven colonies, all located within an area of approximately 100 acres. Mapping efforts since listing suggests that all known habitat and potential habitat of the species are restricted to an area of approximately 375 acres. Within that area, approximately 50 acres are actually occupied by plants. Parcel NV-16-10-003 encompasses the majority of the habitat occupied by this species.*

*Steamboat buckwheat was listed as an endangered species because of its vulnerability to habitat alteration caused by drilling for geothermal development, recreational and commercial development, and mining activities. In addition, Steamboat buckwheat was believed actively threatened at that time by off-road vehicle use, dumping of refuse, and alterations to moisture patterns. Today the main threat is geothermal drilling, but other threats include highway construction and maintenance, private development, competition with invasive weeds, and alteration of spring flows via regional groundwater pumping and other water diversions. A portion of the Steamboat buckwheat population is located within an existing ACEC (Steamboat Hot Springs Geyser Basin) and the parcel for lease is located in a proposed ACEC (Steamboat Buckwheat Botanical ACEC). If it is decided by the BLM to lease Parcel NV-16-10-003, there is potential for geothermal exploration and/or development activities to indirectly impact Steamboat buckwheat through surface water flows and altering soil conditions or other indirect effects, even with a No Surface Occupancy (NSO) stipulation, and depending on project specific proposal. An in depth site-specific hydrological analysis may be required to understand potential impacts to this species from future geothermal exploration/development. Per the 2008 Geothermal Leasing Programmatic Environmental Impact Statement (PEIS) section 6.6, there would be no effect to listed species or habitats from leasing alone, as no ground disturbing activities are authorized. Any future development activities that may occur subsequent to the issuance of a lease would be subject to project-specific compliance with the Endangered Species Act, including the following mitigation measures:*

### ***Special Stipulations for Parcel NV-16-10-003 for Threatened and Endangered Species:***

- *Endangered Species Act Stipulation: “The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or their habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act as amended, 16 USC 1531 et seq., including completion of any required procedure for conference or consultation.”*
- *Sensitive Species Stipulation: For agency designated sensitive species (e.g., sage grouse), a lease stipulation (NSO, CSU, or TL) would be imposed for those portions of high value/key/crucial species habitat where other existing measures are inadequate to meet agency management objectives.*
- *Any proposed action will be in conformance with the BLM Special Status Species Management manual 6840 (12/12/08), including consultation under Section 7 of the Endangered Species Act if required for actions that may impact this species or its habitat.*
- *The sale of parcel NV-16-10-003 will require the lessee to implement the Steamboat Buckwheat Management Plan SB Geo Lease Site (TNC, 1993) that is currently being implemented on adjacent private lands. All applicable management actions in this plan will be implemented for the conservation and recovery of the Steamboat buckwheat.*
- *For any connected action for geothermal exploration and/or development utilizing the resources of this parcel, biological surveys, monitoring, and mitigation measures may apply for the conservation and recovery of the Steamboat buckwheat.*
- *For any connected action for geothermal exploration and/or development utilizing the resources of this parcel, the BLM may require the proponent to assist in implementing the species’ recovery actions outlined in the Steamboat Buckwheat Recovery Plan (1995, USFWS) and 5-Year Review (USFWS, 2009).*

#### **3.4.3 General Wildlife, including BLM Sensitive Species**

*The parcel areas support and are adjacent to lands that support wildlife characteristic of the Great Basin. Biological diversity varies according to topography, plant community, and proximity to water, soil type, and season. For a comprehensive discussion of potential wildlife species and habitats that may be present, refer to the most recent Resource Management Plan (Draft CCDO RMP 2014).*

*BLM sensitive species are species that require special management consideration to avoid potential future listing under ESA and that have been identified in accordance with procedures set forth in BLM Manual 6840 – Special Status Species. A complete list of BLM sensitive species within the area can be found in the Draft Resource Management Plan (Draft CCDO RMP 2014). Many of these species as well as other wildlife species of concern are also discussed in the Nevada State Wildlife Action Plan (NDOW 2013).*

*Sensitive species are defined in BLM Manual 6840 as native species found on BLM-administered lands for which the BLM has the capability to significantly affect the conservation status of the species through management and either one of the following:*

- 1. There is information that a species has recently undergone, is undergoing, or is predicted to undergo a downward trend such that the viability of the species or a distinct population segment of the species is at risk across all or a significant portion of the species range; or*
- 2. The species depends on ecological refugia or specialized or unique habitats on BLM-administered lands, and there is evidence that such areas are threatened with alteration such that the continued viability of the species in that area would be at risk.*

#### ***Parcel NV-16-10-001***

##### ***Big Game-***

*Mule deer (Odocoileus hemionus): Parcel is partially within crucial winter habitat- Loyalton Truckee/Doyle herd. Deer feed on forbs, grasses, and shrubs depending on the time of year. Forbs and grasses are most important in spring and summer while shrubs are most utilized during winter and dry summer months. Occupancy of mature habitat can be limited by water availability. Mule deer populations in Nevada are at an all-time low and population recovery is difficult due to the extent of habitat loss. The lack of crucial winter range is one of the limiting resources for deer populations.*

##### ***BLM Sensitive-***

*Greater sage-grouse: The parcel is entirely within General Habitat Management Area (GHMA) as delineated in the BLM's Approved Resource Management Plan Amendment (ARMPA) for Greater sage-grouse. Figure 4 graphically depicts the extent of GHMA in this parcel. Based on the newest 2016 USGS sage-grouse habitat management categories map, the parcel is entirely within a PHMA, however, the BLM requires a plan amendment or plan maintenance action prior to adopting this map for land use plan decisions. This parcel is approximately 1.2 miles from the Sheep Springs lek. This lek has a high count of 70 sage-grouse and in 2016, had 46 males and 6 females on the lek. The USGS also has a significant amount of telemetry data for this portion of the Virginia Mountains (NDOW comment letter 2016).*

*In response to the USFWS's 2010 determination that the listing of the greater sage-grouse was "warranted, but precluded" by other priorities, the BLM in coordination with the USDA Forest Service, developed a landscape-level management strategy, based on the best available science, that was targeted, multi-tiered, coordinated, and collaborative. This effort culminated on September 21, 2015 with the signing of the Record of Decision (ROD) and Approved Resource*



*Management Plan Amendments for the Great Basin Region, including the Greater Sage-Grouse Sub-Regions of: Idaho and Southwestern Montana, Nevada and Northeastern California, Oregon, and Utah. The efforts of the BLM, in coordination with the Forest Service on National Forest System lands within the remaining range of the species, constitute a coordinated strategy for conserving the Greater Sage-Grouse and the sagebrush-steppe ecosystem on Federal lands on which the species depends. This ROD amended multiple Land Use Plans in these six states, including the Carson City District Resource Management Plan (CRMP, BLM 2001).*

*If it is decided by the BLM to lease Parcel NV-16-10-001, there is potential for geothermal exploration and/or development activities to adversely impact Greater sage-grouse habitat and the population of the species that uses the area throughout the season. However, these Habitat Management Areas are open to geothermal leasing, exploration, and development with major stipulations in PHMA and minor stipulations in GHMA, in addition to the applicable stipulations described below. Site and project specific mitigation measures for any future geothermal exploration/development projects on these parcels would be developed using the Objectives and Management Decisions found in the September, 2015 ROD. Any adverse impacts to Greater sage-grouse habitat or populations due to future geothermal exploration and/or development must be mitigated to ensure a net conservation gain is achieved for the species (as per Management Decision (MD) SSS 3a of the Sage Grouse Plan Amendment (SGPA).*

***Special Stipulations for Parcel NV-16-10-001 for BLM Sensitive Species:***

- *Sensitive Species Stipulation: For agency designated sensitive species (e.g., sage grouse), a lease stipulation (NSO, CSU, or TL) would be imposed for those portions of high value/key/crucial species habitat where other existing measures are inadequate to meet agency management objectives.*
- *Timing Limitations and Controlled Surface Use Lease Stipulations: Protection of important habitat and migration corridors. This stipulation would be applied to protect the continuity of migration corridors and important habitat.*

*According to the Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment (2015), the following stipulations may be applicable to this parcel if the BLM decides to lease and there is a proposed geothermal exploration and/or development, depending on project specific proposal. Additional stipulations related to GRSg can be found in Appendix B in this EA.*

- *Table 2-1 (Map 2-4, Appendix A) – (CSU Stipulation applied to GHMA)*
- *Appendix B: Applying Lek Buffer-Distances When Approving Actions-(Infrastructure related to energy development within 3.1 miles of leks)*
- *Appendix C: Required Design Features – (RDF Gen 1 through RDF Gen 22, as well as RDF Lease FM 1 through RDF Lease FM 15)*
- *Appendix D: Greater Sage-Grouse Monitoring Framework – (Proponent monitoring commitments)*
- *Appendix E: Greater Sage-Grouse Disturbance Cap Guidance*
- *Appendix F: Regional Mitigation Strategy (net conservation gain standard for GRSg and its habitat).*

- *Appendix G: Fluid Mineral Stipulations, Waiver, Modifications, and Exceptions*
- *Appendix I: Avoid, Minimize, and Apply Compensatory Mitigation Flowchart*
- *Appendix J: Adaptive Management Plan*
- *Appendix M: Greater Sage-grouse Noise Protocol*
- *Appendix N: State of Nevada Conservation Credit System*

## **NV-16-10-002**

### ***Big Game-***

*California bighorn sheep (Ovis Canadensis californiana): Parcel is partially within California bighorn habitat-Virginia Mountains herd. NDOW delineates bighorn sheep habitat via interstate 80, with everything north of I-80 comprising of California or Rocky Mountain bighorn subspecies, and to the south of the interstate, desert bighorn subspecies. The parcel is within occupied California bighorn habitat with Cottonwood Canyon being a major use area. Lambing occurs in the cliffs and rock piles.*

*Mule deer (Odocoileus hemionus): The parcel is almost entirely within mule deer crucial winter habitat-Loyalton Truckee/Doyle herd. Deer feed on forbs, grasses, and shrubs depending on the time of year. Forbs and grasses are most important in spring and summer while shrubs are most utilized during winter and dry summer months. Occupancy of mature habitat can be limited by water availability. Mule deer populations in Nevada are at an all-time low and population recovery is difficult due to the extent of habitat loss. The lack of crucial winter range is one of the limiting resources for deer populations.*

*Pronghorn (Antilocapra americana): The parcel is entirely within year-round pronghorn habitat-Virginia Mountains herd. Pronghorn only occur in North America. Habitat requirements consist of large expanses of low, rolling, and relatively barrier-free terrain. Preferred forage is forbs, shrubs, and then grasses. Free water is required.*

### ***BLM Sensitive-***

*Greater sage-grouse: The parcel is almost entirely within General Habitat Management Area (GHMA), with approximately 120 acres within PHMA (Primary Habitat Management Area), as delineated in the BLM's Approved Resource Management Plan Amendment ( ARMPA) for Greater sage-grouse. Figure 4 graphically depicts the extent of GHMA and PHMA in this parcel. Based on the newest 2016 USGS sage-grouse habitat management categories map, the parcel is entirely within a PHMA (Priority Habitat Management Area), however, the BLM requires a plan amendment or maintenance prior to adopting this map for land use plan decisions. This parcel encompasses the West Cottonwood lek. This lek has consistently had between 15-24 males on the lek yearly, with a high count of 8 females on the lek. Telemetry data show sage-grouse from adjacent leks utilizing the habitat around the West Cottonwood lek throughout the year.*

*In response to the USFWS's 2010 determination that the listing of the greater sage-grouse was "warranted, but precluded" by other priorities, the BLM in coordination with the USDA Forest Service, developed a landscape-level management strategy, based on the best available science, that was targeted, multi-tiered, coordinated, and collaborative. This effort culminated on*

*September 21, 2015 with the signing of the Record of Decision (ROD) and Approved Resource Management Plan Amendments for the Great Basin Region, including the Greater Sage-Grouse sub-Regions of: Idaho and Southwestern Montana, Nevada and Northeastern California, Oregon, and Utah. The efforts of the BLM, in coordination with the Forest Service on National Forest System lands within the remaining range of the species, constitute a coordinated strategy for conserving the Greater Sage-Grouse and the sagebrush-steppe ecosystem on Federal lands on which the species depends. This ROD amended multiple Land Use Plans in these six states, including the Carson City District Resource Management Plan (CRMP, BLM 2001).*

*If it is decided by the BLM to lease Parcel NV-16-10-002, there is potential for geothermal exploration and/or development activities to adversely impact Greater sage-grouse habitat and the population of the species that uses the area throughout the season. However, these Habitat Management Areas are open to geothermal leasing, exploration, and development with major stipulations in PHMA and minor stipulations in GHMA, in addition to the applicable stipulations described below. Site and project specific mitigation measures for any future geothermal exploration/development projects on these parcels would be developed using the Objectives and Management Decisions found in the September, 2015 ROD. Any adverse impacts to GrSG habitat or populations due to future geothermal exploration and/or development must be mitigated to ensure a net conservation gain is achieved for the species (as per Management Decision (MD) SSS 2 of the Sage Grouse Plan Amendment (SGPA).*

***Special Stipulations for Parcel NV-16-10-002 for BLM Sensitive Species:***

- *Sensitive Species Stipulation: For agency designated sensitive species (e.g., sage grouse), a lease stipulation (NSO, CSU, or TL) would be imposed for those portions of high value/key/crucial species habitat where other existing measures are inadequate to meet agency management objectives.*
- *Timing Limitations and Controlled Surface Use Lease Stipulations: Protection of important habitat and migration corridors. This stipulation would be applied to protect the continuity of migration corridors and important habitat.*

*According to the Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment (2015), the following stipulations may be applicable to this parcel if the BLM decides to lease and there is a proposed geothermal exploration and/or development, depending on project specific proposal. Additional stipulations related to GRSG can be found in Appendix B in this EA.*

- *Table 2-1 (Map 2-4, Appendix A) – (CSU Stipulation applied to GHMA, NSO stipulation applied to PHMA)*
- *Appendix B: Applying Lek Buffer-Distances When Approving Actions-Distances When Approving Actions-(Infrastructure related to energy development within 3.1 miles of leks)*
- *Appendix C: Required Design Features – (RDF Gen 1 through RDF Gen 22, as well as RDF Lease FM 1 through RDF Lease FM 15)*
- *Appendix D: Greater Sage-Grouse Monitoring Framework – (Proponent monitoring commitments)*

- *Appendix E: Greater Sage-Grouse Disturbance Cap Guidance*
- *Appendix F: Regional Mitigation Strategy (net conservation gain standard for GRSG and its habitat)*
- *Appendix G: Fluid Mineral Stipulations, Waiver, Modifications, and Exceptions*
- *Appendix I: Avoid, Minimize, and Apply Compensatory Mitigation Flowchart*
- *Appendix J: Adaptive Management Plan*
- *Appendix M: Greater Sage-grouse Noise Protocol*
- *Appendix N: State of Nevada Conservation Credit System*

### ***Parcel NV-16-10-003***

#### ***Big Game-***

*Mule deer (Odocoileus hemionus): Parcel is partially within year-round habitat. Deer feed on forbs, grasses, and shrubs depending on the time of year. Forbs and grasses are most important in spring and summer while shrubs are most utilized during winter and dry summer months. Occupancy of mature habitat can be limited by water availability. Mule deer populations in Nevada are at an all-time low and population recovery is difficult due to the extent of habitat loss. The lack of crucial winter range is one of the limiting resources for deer populations.*

#### ***BLM Sensitive-***

*Altered andesite buckwheat (Eriogonum robustum): This species is known to occur in the Steamboat area. The range of this BLM sensitive species consists of the mountains and foothills surrounding Reno-Sparks and Virginia City in southern Washoe and western Storey Counties, Nevada. Nearly all known populations, including those in the Steamboat area, occur on dry, shallow, highly acidic gravelly clay soils. These areas support sparse vegetation, mostly consisting of stunted woodlands of ponderosa pine (Pinus ponderosa) and/or Jeffrey pine (Pinus jeffreyi). While native fauna seem to have nominal impacts, this plant is negatively affected by substrate disturbance from cattle and wild horses. Additionally, open soils or ridgetops and close proximity to human populations make their habitat attractive for road development. Currently, roads and OHV use impact about half of the known sites where altered andesite buckwheat occurs. If it is decided by the BLM to lease Parcel NV-16-10-003, there is potential for geothermal exploration and/or development activities to adversely impact Altered andesite buckwheat through surface water flows and altering soil conditions or other indirect effects, even with a No Surface Occupancy (NSO) stipulation, and depending on project specific proposal.*

### ***Special Stipulations for Parcel NV-16-10-003 for BLM Sensitive Species:***

- *Sensitive Species Stipulation: For agency designated sensitive species (e.g., sage grouse), a lease stipulation (NSO, CSU, or TL) would be imposed for those portions of high value/key/crucial species habitat where other existing measures are inadequate to meet agency management objectives.*
- *Timing Limitations and Controlled Surface Use Lease Stipulations: Protection of important habitat and migration corridors. This stipulation would be applied to protect the continuity of migration corridors and important habitat.*

#### **3.4.4 Cultural Resources**

Pending or future lease parcels within the proposed lease areas would be offered for lease subject to applicable laws and lease conditions. The proposed lease areas may be found to contain historic properties and/or resources protected under the National Historic Preservation Act (NHPA), American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, E.O. 13007, or other statutes and executive orders. The BLM will not approve any ground disturbing activities that may affect cultural properties eligible to the National Register of Historic Places (NRHP), until it completes its obligations under applicable requirements of the NHPA and other authorities. On all lease areas, once a project specific proposal is submitted, an additional Section 106 cultural resource assessment would be completed where site specific issues would be addressed as appropriate. The BLM may require modification to exploration or development proposals to protect such properties, or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized or mitigated.

The BLM Carson City District Office Class I Cultural Resources Report (CRR) referenced for this EA adequately summarizes the presence and absence of archaeological inventories and cultural properties located on each proposed lease area (Young, 2014; Wright, 2016). Pertinent cultural resource information was reviewed and analyzed for the Area of Potential Effect (APE), which is defined as all lease areas comprising the Proposed Action. Cultural resource information available for each of the proposed lease areas varies. In no case is an entire lease area completely surveyed. Un-inventoried portions of lease areas or lease areas with small or minimal inventories were compared to adjacent sections or nearby areas with similar land forms. This analysis included an assessment of these lease areas for cultural resource sensitivity based upon elevation, topography, vegetation, and water resources especially in areas that have not been previously inventoried.

The location of prehistoric archaeological sites varies in predictable ways across the Western, Central, and Eastern regions of the CCDO. Sites are common in well-watered valley bottoms, near the mouth of mountain-front canyons, near outcrops of toolstone-quality rocks, and in locally productive resources patch (e.g. deer migration routes or pinyon communities) in mountain ranges. In fact, the distribution and relative proportion of sites and site types in the three lease parcels are very similar; most of the variation in the counts of site types between the regions is likely due to survey coverage, land status, and size of the region (Young, 2014). A brief summary and analysis of inventories within the proposed lease areas is provided below.

Two lease parcels (NV-16-10-001 & 002) are located in the northern portion of the Western Region; Long Valley Creek drains toward the mostly dry basin of Honey Lake Valley. The deeply incised drainage of Long Valley Creek, moving north, gives way to broad fans and dune systems on the margins of Honey Lake, a sub-basin of the formerly extensive, Pleistocene-age pluvial Lake Lahontan. Although the general rise and fall of the Pleistocene lake in the Honey Lake basin was likely synchronous with that of the greater Lake Lahontan, a detailed lake level reconstruction, especially for the Late Pleistocene and Holocene, would be specific to Honey Lake because most of the time the lake within the sub-basin lacks connection to adjacent basins. Today the prominent feature in the Honey Lake Valley is a

broad, vegetated, and open playa floor surrounded by undulating dune fields.

**Parcel NV-16-10-001:** Three inventories have been conducted within the lease parcel resulting in the identification of two sites: WA3190 is an unevaluated sites consisting of a sparse lithic scatter. Site WA9008 is recorded as an ineligible hearth feature and charcoal stain encountered.

**Parcel NV-16-10-002:** Four inventories have been conducted within the lease parcel resulting in the recordation of one site: WA8146, an ineligible sparse lithic scatter.

One lease parcel is located in the Steamboat Hills in the Western Region centered on the Truckee Meadows and Carson Valley. The Carson and Truckee rivers are the major waterways, although smaller drainages, including Long Valley and Steamboat creeks provide significant floral and faunal habitats, especially in the area surrounding and including this lease parcel. Because of the orographic effects resulting in a generally decreasing moisture gradient, west to east, across the region, well-watered perennial drainages are concentrated at the mountain front and, in this region, only the two major drainages reach the interior on a year-round basis. This pattern results in well-watered valleys giving way to dry mountain ranges and hills cut by discrete and narrow riparian corridors. The southern drainages coalesce at Washoe Lake, with its expansive arcuate dune and adjacent wetland, before falling into Steamboat Creek. The Steamboat drainage collects runoff from the Mount Rose fan as it opens into a large wetland valley-bottom, forming the Truckee Meadows (modern day Reno/Sparks). Steamboat Creek, emanating from the Truckee Meadows, is the final tributary input to the Truckee River drainage as it enters its lower-canyon reach and flows toward its terminus at Pyramid Lake.

The Steamboat Hills have attracted significant archaeological attention. The first significant, and well-dated, number of complex habitation assemblages appears in the Middle Archaic in all regions. The early villages of the Western Region are found in the Steamboat Hills and epitomize this overall pattern. A significant number of eligible sites have been recorded in the area surround the Steamboat lease parcel. Over 500 sites have been recorded within a four-mile radius of the Steamboat lease parcel.

**Parcel NV-16-10-003:** Two inventories have been conducted within the lease parcel and one significant site has been recorded, WA1452, a large complex habitation assemblage. The surrounding area has been extensively inventoried and over 500 sites have been recorded within the greater region (approx. 4 radial miles). Based on known, significant archaeological resources in the area, the probability to encounter significant archaeological resources is very high. This area has been designated a high probability area.

Issuing new fluid mineral leases would not result in any direct impacts to cultural resource because no surface disturbing activities would be authorized. Potential direct and indirect impacts from exploration and development activities would be analyzed under a separate site specific environmental analysis.

Based on the results of previous cultural resource inventories, the potential for locating additional cultural resources within the proposed lease areas reviewed for the Proposed Action ranges from low to high. Furthermore, analysis of the reasonably foreseeable impacts of

leasing for both identified and unidentified cultural properties resulted in the recommendation of No Historic Properties Affected for all of the lease parcels. This is based on the determination that leasing could occur without impact to known or unknown eligible historic properties in each of the lease areas.

After consideration of cultural resource information, and other general data including the CRMP (BLM, 2001), the PEIS (BLM and USFS, 2008), and applicable fluid mineral activity NEPA documents, specific data relating to the individual proposed parcels such as topography, vegetation, water and soils, it has been determined that reasonable fluid mineral development could occur without adverse impacts to known cultural properties eligible to the NRHP for parcels NV-16-10-001 & 002.

However, there is an extremely high probability that eligible sites could be discovered on parcel NV-16-10-003, based on site data and inventory results of adjacent sections.

The Nevada Protocol Part VII.D. was applied to the cultural resource review for the Proposed Action and the CCDO determination, under the Nevada Protocol review threshold at VII.D.(1), is that there are no historic properties effected; eligible sites are present but will not be effected as defined by 36 CFR 800.4.

Known cultural resources are located in such a fashion (size, density and placement) that avoidance is feasible during development of fluid mineral resources in parcels NV-16-10-001 & 002. Based on an analysis of inventoried area adjacent to NV-16-10-003, however, avoidance may not be feasible during development of fluid mineral resources on this parcel. The Steamboat lease parcel (NV-16-10-003) is within a very high probability area.

A complete inventory of the proposed or anticipated future lease parcels has not occurred; therefore, the following stipulation should be added to lease parcels in the project area:

“This lease may be found to contain historic properties and/ or resources protected under the National Historic Preservation Act (NHPA), American Indian Religious Freedom Act, Native American Graves and Repatriation Act, E.O. 13007, or other statutes and executive orders. The BLM will not approve any ground disturbing activities that may affect such properties or resources until it completes its obligations under applicable requirements of the NHPA and other authorities. The BLM may require modification to exploration or development proposals to protect properties, or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized or mitigated.”

### **3.4.5 Native American Religious Concerns**

In accordance with the NHPA, NEPA, FLPMA, the American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, and E.O. 13007, the BLM must provide affected tribes an opportunity to comment and consult on the Proposed Action. The BLM must attempt to limit, reduce, or possibly eliminate any negative impacts to Native American traditional, cultural, or spiritual sites, activities, and resources.

The Washoe Tribe of Nevada and California and the Susanville Rancheria were notified of

the proposed lease sale via certified letter on May 25, 2016. They were asked to identify traditional cultural places or any other areas of traditional cultural importance that need to be considered within the APE. This was followed by telephone calls from CCDO staff. Any documents or concerns regarding leasing in the proposed lease areas that were submitted to the CCDO were formally documented during the consultation process, which is ongoing.

There are no known Native American concerns for the Fish Springs lease parcels, NV-16-10-001 & 002. However, the Washoe Tribe has previously formally expressed considerable concern over the leasing of parcels adjacent the current Steamboat lease parcel (NV-16-10-003). The Washoe Tribe has previously recommended adjacent Steamboat parcels not be leased.

Issuing new fluid mineral leases would not result in any direct impacts because no surface disturbing activities would be authorized. Potential direct and indirect impacts from exploration and development activities would be analyzed under a separate site-specific environmental analysis. Although the act of selling fluid mineral leases does not directly authorize exploration, development, production, or any other related ground disturbance activities, there does exist the potential to impact Native American sites of spiritual, cultural, or traditional nature. Not all sensitive traditional, cultural, or spiritual sites and activities are of a physical nature. Many tribal sacred sites may lack artifacts that would support a past and continued use of the area. The fact that such a site exists and retains its physical integrity and is attached to the continuation of a sacred spiritual belief and/or use, is not to be viewed by non-natives as unimportant. However, impacts to cultural sites can be minimized and/or mitigated when affected Tribes provide input and actively and fully participate in the decision making process.

Without a specific proposed project location and description, identifying impacts to specific tribal resources is difficult. The tribes being given the opportunity to meet with BLM staff and management at the lease sale, exploration, and development stages, would allow for further tribal participation opportunities. As noted previously, the BLM would produce a site specific EA for any future development. Such an EA would discuss alternatives or measures that may reduce or eliminate impacts to Native American Religious Concerns.

### **3.5 No Action Alternative Discussion**

Implementation of the No Action Alternative would result in the lands not being open to new fluid mineral leasing and the resulting indirect impacts from exploration, other than casual use, or development. Hence, no ground disturbing activities beyond those proposed for or authorized under past leases would occur as a result of the No Action Alternative to the Proposed Action.

Although environmental impacts resulting from the issuance of new leases within the area of the Proposed Action would not occur under the No Action Alternative, implementation of this alternative would not be consistent with the land use plan. The No Action Alternative would deprive county, state and federal agencies of royalty payments which could be generated from fluid mineral leasing and the successful development of fluid mineral resources.





## **Chapter 4: Cumulative Effects**

The purpose of the cumulative impacts analysis for the proposed action is to evaluate the combined, incremental effects of human activity within the scope of the project. Council of Environmental Quality (CEQ) regulations defines scope to include connected actions, cumulative actions, and similar actions (40 CFR 1508.25). The Council on Environmental Quality formally defines cumulative impacts as follows:

‘...the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time’ (40 CFR 1508.7).

## 4.1 Past, Present and Reasonably Foreseeable Future Actions

The past, present, and reasonably foreseeable future actions applicable to the assessment area are identified as described below.

**Table 4.1: Past, Present, and Reasonably Foreseeable Future Actions Table**

Project – Name or Description	Status (x)		
	Past	Present	Future
Issuance of multiple use decisions and grazing permits for ranching operations through the allotment evaluation process and the reassessment of the associated allotments.	X	X	X
Livestock Grazing	X	X	X
Invasive weed inventory/treatments	X	X	X
Recreation	X	X	X
Geothermal exploration and utilization	X	X	X
Range Improvements (including fencing, wells and water developments)			X
Utility and other Rights-of-Way	X	X	X

## 4.2 Cumulative Effects Discussion

No impacts were identified for any resources as a result of implementing the Proposed Action as the proposal is leasing only and does not include any authorizations for ground disturbing activities. Leasing fluid minerals on public land in the three parcels comprising the Proposed Action would not contribute to cumulative impacts on resources or resource uses in the project area. Issuing leases does not cause direct impacts; however, it does imply a conditional commitment of resources for future exploration and utilization. Three separate and generally sequential phases of geothermal development could occur. The probable sequence and degree of environmental impact would be contingent upon the success or failure of each preceding phase. The three phases are exploration, development/production, and close-out. While the number, variety, and magnitude of actions on federal lands that may be considered to occur is great, information about how many future projects may actually be undertaken is lacking, and information about the likely locations of future development is unknown. This evaluation does not replace the requirement that BLM conduct a site-specific environmental analysis at the exploration, development, and production stages, in order to comply with the NEPA.

The cumulative impact analysis from Chapter 5 of the PEIS for Geothermal Leasing in the Western United States, discusses these subsequent phases and potential impacts associated with them ([http://www.blm.gov/geothermal\\_eis](http://www.blm.gov/geothermal_eis)). Any proposals on these leases in the future for exploration

or development activities would be analyzed under a site-specific environmental analysis which will include an analysis of cumulative impacts.

If the No Action alternative were selected there would be no potential impacts or cumulative impacts to the considered parcels from any future geothermal exploration or development projects. Selection of the No Action alternative would not affect any of the other activities that have historically and currently are occurring on the parcels.

## **Chapter 5: Tribes, Individuals, Organizations, or Agencies Conferred**

**Table 5.1: List of Persons, Agencies and Organizations Consulted**

Name	Purpose & Authorities for Consultation or Coordination
Susanville Indian Rancheria	Cultural Resources and Native American Religious Concerns
Washoe Tribe of California and Nevada	Cultural Resources and Native American Religious Concerns

## **Chapter 6: List of Preparers**

**Table 6.1: List of Preparers**

<b>Name</b>	<b>Title</b>	<b>Responsible for the Following Section(s) of this Document</b>
Linda Appel	Rangeland Management Specialist	Farm Lands, Invasive Nonnative Species, Livestock Grazing, Vegetation, Wild Horses & Burros
Melanie Cota	Wildlife Biologist	ACECs, Migratory Birds, Threatened or Endangered Species, BLM Sensitive Species, General Wildlife
Dan Westermeyer	Outdoor Recreation Planner	Wild & Scenic Rivers, Wilderness/WSAs, Lands with Wilderness Characteristics, Recreation, Travel Management, Visual Resources
Jason Wright	Archaeologist	Cultural Resources, Native American Religious Concerns, Paleontological Resources
Angelica Rose	Planning & Environmental Coordinator	Environmental Justice, Socioeconomics
Ken Depaoli	Geologist	Mineral Resources
Dave Schroeder	Environmental Protection Specialist	Wastes, Hazardous or Solids; Geothermal Project Lead
Matt Simons	Reality Specialist	Land Use Authorizations
Michelle Stropky	Hydrologist	Air Quality, Floodplains, Water Quality, Wetlands/Riparian Zones, Soils
Keith Barker	Fire Ecologist	Fire Management
Coreen Francis	Forester	Forestry Resources